

FIG. 1

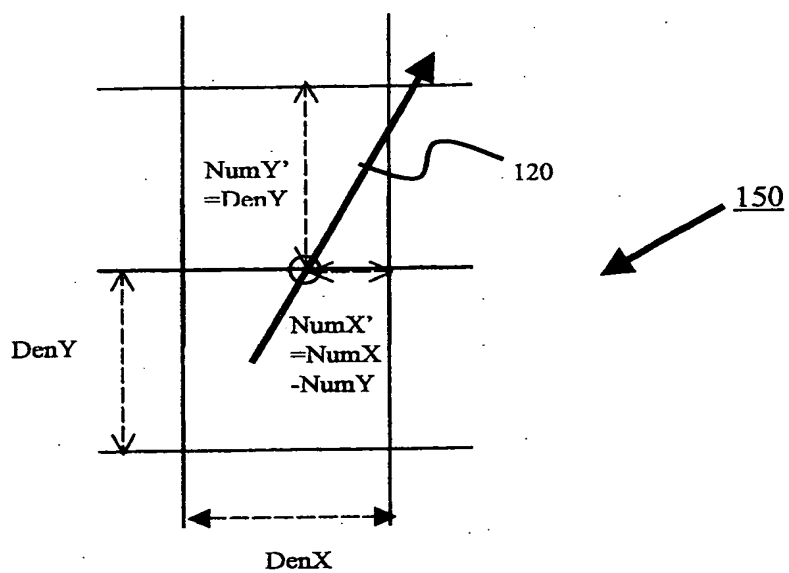


FIG. 2

PSEUDOCODE

The direction of a ray is Vector V

The origin of the ray is Vector B

Let the coordinates of the cell that is started with in be $\text{Trunc}(B \cdot S)$ for all axes S.

310 {

 For all axes Q {

 DenQ is the multiplication sequence of the deltas of all axes other than Q

 If vector V is positive along the Q axis {

$\text{NumQ} = (1 - \text{Fract}(B \cdot Q)) \cdot \text{DenQ}$

 }

 Else {

$\text{NumQ} = \text{Fract}(B \cdot Q) \cdot \text{DenQ}$

 }

 }

 While (forever) {

 With Q, the axis whose Numerator is smallest of all axes, do {

 For all axes R where $R \neq Q$ {

$\text{NumR} = \text{NumR} - \text{NumQ}$

 }

$\text{NumQ} = \text{DenQ}$

 Perform step into the cell adjacent to this one on axis Q,
in the direction of V·Q

 }

 }

FIG. 3

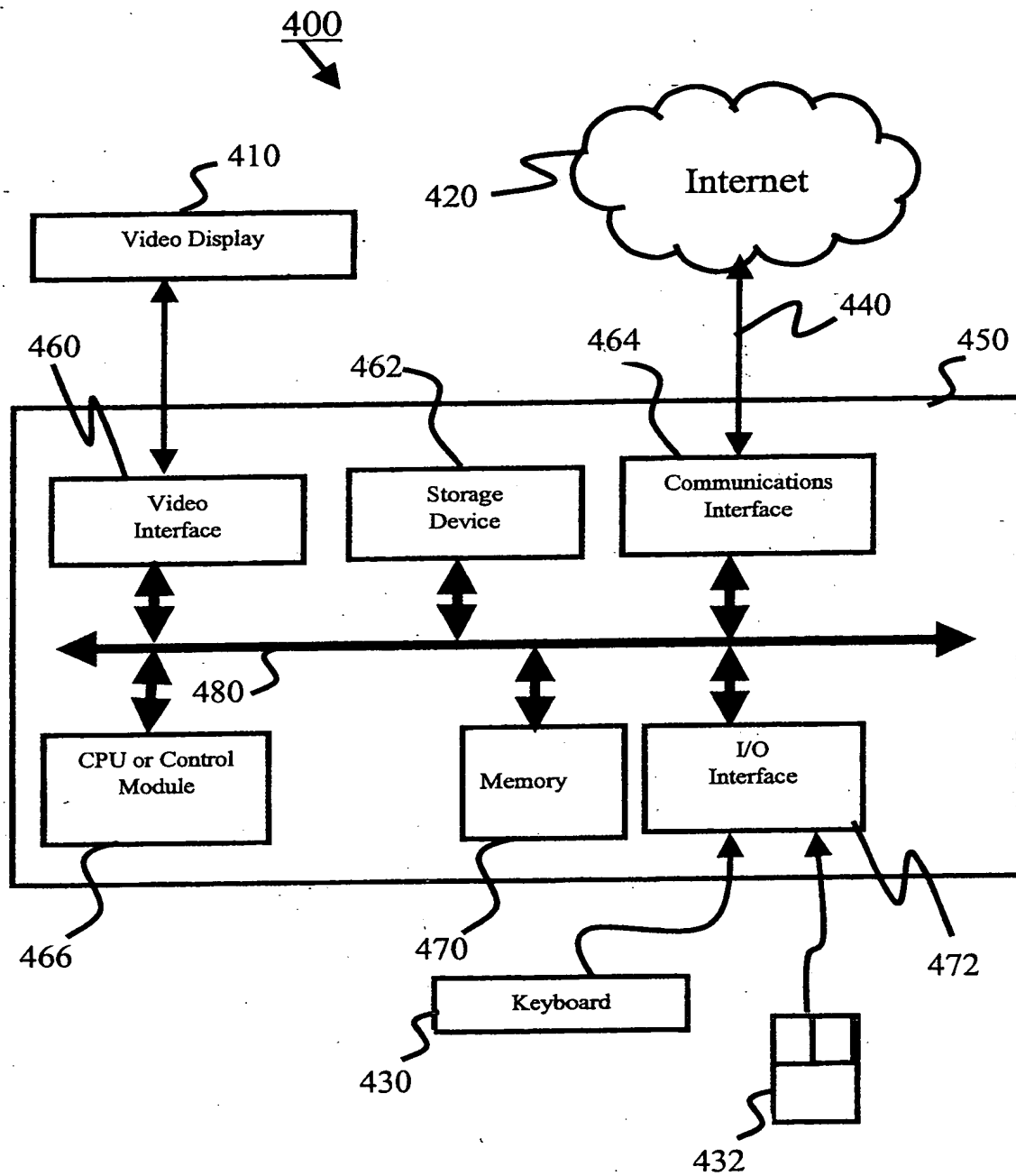


FIG. 4

PSEUDOCODE

Instantiating pseudocode 300 for 2D case :

The direction of a ray is Vector V

The origin of the ray is Vector B

Let the coordinates of the cell that is started with in be $\text{Trunc}(B \cdot S)$ for all axes S.

$\text{DenX} = y - \text{delta};$

$\text{DenY} = x - \text{delta};$

If vector V is positive along the X axis

$\text{NumX} = (1 - \text{Fract}(B \cdot X)) * \text{DenX}$

Else

$\text{NumX} = \text{Fract}(B \cdot X) * \text{DenX}$

If vector V is positive along the Y axis

$\text{NumY} = (1 - \text{Fract}(B \cdot Y)) * \text{DenY}$

Else

$\text{NumY} = \text{Fract}(B \cdot Y) * \text{DenY}$

While (forever) {

 If ($\text{NumX} < \text{NumY}$) {

$\text{NumY} = \text{NumY} - \text{NumX}$

$\text{NumX} = \text{DenX}$

 Step into the next horizontal cell if $V \cdot X$ is positive, or
 the previous horizontal cell if $V \cdot X$ is negative.

 }

 else {

$\text{NumX} = \text{NumX} - \text{NumY}$

$\text{NumY} = \text{DenY}$

 Step into the next vertical cell if $V \cdot Y$ is positive, or
 the previous vertical cell if $V \cdot Y$ is negative.

 }

}

FIG. 5